

Project Title:	<b>Moulded microfluidics</b>
Supervisor(s):	Dr Ken Healy and Dr Alan P. Morrison
No. of Students:	1 or 2
Project Location:	Quantum Electronics Research Lab., 1 <sup>st</sup> floor EEE Building
Project Description:	<p>Microfluidic channels can be used to construct tiny pumps, carry out chemical reactions in very small volumes, and transport large molecules and living cells. The core of this project is to build micrometre-sized channels for transporting liquids, using a micromoulding method. The main application for these channels will be in experiments with nanometre-sized pores. Salt solutions and DNA molecules to be passed through these nanopores will be supplied via your microchannels.</p> <p>Micromoulding is a simple process, just on a small scale: make a mould (using a photo-definable resist or silicon micromachining), mix the liquid components that will form the elastic polymer substrate, pour them in to the mould, cure (harden) with heat or UV light, and then remove.</p> <p>There is lots of scope for extensions to the core project: using these channels to test and experiment with nanopores, to analyse DNA, to study the microscale and nanoscale physics involved in liquid flow through microchannels, and/or anything else relevant that you are interested in.</p>
Special Requirements:	<p>Good spatial awareness and some experience in technical drawing and CAD would be helpful.</p> <p>If you want to choose this project, you need to talk to Ken Healy (Postgrad Room, or <a href="mailto:kenh@rennes.ucc.ie">kenh@rennes.ucc.ie</a>) about it beforehand to sort out the details of what you want to do.</p>